

## **Remarks**

Claims 16 and 28 have been amended to correct apparent typographical misspellings. Independent Claims 16 and 27 have been amended to clarify that sufficient catalyst including inert particulate solids is present to dissipate heat generated during the reaction. Other unneeded references to inert material have been deleted. Support for the amendment is found on page 5, lines 11-17, of the Specification.

Claim 16 has been amended to incorporate the language of claim 17.

Claim 17 has been cancelled.

The pending claims are 16 and 18-28.

### Applicants' Invention

Appellants' invention is directed to a fluidized-bed, gas-phase, process for manufacture of vinyl acetate from ethylene, acetic acid, and oxygen. In Appellants' process, separate feed streams primarily containing hydrocarbons and oxygen and an inert material are introduced into a fluidized bed reactor, such that neither feedstream nor the outlet gas from the reactor is within flammability limits. However, during operation of the claimed process the total amount of oxygen used is higher than may normally be used without danger of flammability even though the oxygen concentrations in the feedstreams are constrained by safety concerns of creating an explosive mixture, separation of the feedstreams results in an effective higher usage of oxygen in the reactor. This increases the oxidation efficiency of the catalytic oxidation reaction.

Separation of the primary oxygen feedstream from the primary hydrocarbon feedstream is possible in Appellants' fluidized system because the fluidization medium in the reactor will prevent uncontrolled oxidation at the point of entry of the oxygen feedstream into the reactor. In contrast, a separate introduction of high concentration oxygen into a fixed bed catalytic reactor system would not be possible because of the probable creation of a "hotspot" at the point of entry.

Appellants' invention results in a more efficient oxidation reaction within acceptable safety restrictions.

### Prior Rejections and Arguments

Applicants note the rejections of the claims submitted in this application are the same as made in the parent case. Without unduly burdening the record, Applicants incorporate by reference their arguments made in the Appeal Brief submitted in the

prior application with respect to the cited references together with evidentiary submissions including the Williams Declaration.

#### Applicants' Additional Arguments and Submissions Regarding the Pending Claims

However, Applicants do wish to make further submissions as to patentability of the pending claims, which were not part of the prior applications. Based on these submissions, Applicants urge that the pending claims are patentably distinct from the cited references.

First, Applicants point out that the claims now require that sufficient particulate catalyst (including inert particulates) is present in the fluid bed reactor to allow dissipation of heat generated during the reaction. Applicants submit this property is not described in any of the cited references.

Further, Applicants strongly point out that independent claim 16 (as amended) and independent claim 27 include a further element that the process is conducted with a total oxygen content (if the feed streams were to be combined) which is higher than may be used without danger of flammability. The language of claim 16 (as amended) states "...the total amount of oxygen employed is higher than may be used without danger of flammability, if all feed streams were combined." The language of claim 27 states the "...levels of oxygen are employed higher than may be used in a fixed bed reactor, without danger of flammability...."

Applicants believe that manufacture of vinyl acetate using such higher levels of total oxygen (if all streams were combined) during operation of their claimed process is more efficient than using other processes and process conditions described in the prior art. Specifically, even if the Sennewald and Calcagano teachings could be properly combined, there is no description in any of those documents that teaches or suggests use of a total oxygen content, if the feed streams were combined, in an elevated regime that would be in a danger of flammability. Without such teaching or suggestion, Applicants submit that no *prima facie* basis for a rejection under 35 USC §103(a) has been made.

The Examiner urges that "no unexpected result is seen for supplying oxygen separately at the same concentration as suggested in the prior art and applicants do not present any persuasive evidence that their process would afford any expected result when operating at the prior art oxygen feed rates." (emphasis added.) However, the pending claims now do require operation of the process at higher oxygen feed rates

during operation of the claimed process. Clearly, this aspect of Applicants' invention was not suggested by any of the cited documents.

Specifically, the Sennewald documents only describe a fluid bed process with a single feed input. Nowhere in those documents is suggested operating at an oxygen feed rate that would approach the flammability safety limits. Although the Calcagano reference describes introducing oxygen separately from ethylene/acetic acid in a liquid-phase process, there is no suggestion that the oxygen feed would approach safety limits. Therefore, only Applicants have described and claimed a process of using higher oxygen feed, which leads to higher product throughput.

#### Double Patenting Rejection Obviated By Terminal Disclaimer

Applicants submit herewith a Terminal Disclaimer which obviates the Obvious-type Double Patenting rejection made in the Office Action.

#### Summary

Applicants have amended their claims to require features not described in the cited art. Significantly, all of the pending claims now require operation of a process using oxygen feeds higher than the art would have considered acceptable in regard to safety. This operation directly leads to higher activity and throughput and more efficient operation. Thus, Applicants submit that all pending claims are in condition for allowance and request the Examiner to reconsider the rejections.

Respectfully submitted,

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